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09/575,119	05/23/2000	Simon Robert Walmsley	PP07US	9160

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SILVERBROOK RESEARCH PTY LTD  
393 DARLING STREET  
BALMAIN, 2041  
AUSTRALIA

EXAMINER

RAHIMI, IRAJ A

ART UNIT. PAPER NUMBER

2622

DATE MAILED: 06/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/575,119

Applicant(s)

WALMSLEY ET AL.

Examiner

(Iraj) Alan Rahimi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 February 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 May 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Amendment***

1. In papers filed on February 27, 2004, applicant amended claims 1, 2 and 12 and added new claims 29 and 30. Abstract was shortened to below 150 words, thus objection is removed.

### ***Response to Arguments***

2. Applicant's arguments with respect to claim 12, 26 and 27 have been considered but are moot in view of the new ground(s) of rejection. Applicant stated in his response that claims 2-11 are dependent on claim 1. Actually claim 10 is an independent claim.

### ***Claim Objections***

3. Claim 24 is objected to because of the following informalities: On second line of the claim, the word "generators" should be "generates". Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 12-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Miura (US patent 6,659,584).

Regarding claim 12, Miura discloses a controller 24 for a printer module having a printhead that prints an image on printable media, said controller comprising:

a central processing unit (CPU 25);

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program memory (ROM 26) associated with said central processing unit, said program memory storing program steps for execution by said central processing unit to operate said printer module to print said image;

one or more interface units 19 communicating with components of said printer module; image storage memory storing said image; and

an image access unit (Discharge Controller 122) in communication with said image storage memory, said central processing unit and a printhead interface, said image access unit accessing said image in said image storage memory and transferring said image to said printhead interface on command from said central processing unit (Fig. 5);

wherein said printhead interface transforms said image for printing by a printhead (Fig. 5).

Regarding claim 13, Miura discloses the controller of claim 12 further comprising scratch memory associated with said central processing unit for variable storage (RAM 27).

Regarding claim 14, Miura discloses the controller of claim 12 further comprising a serial bus interface communicating with a serial bus of a compact printer system including one or more further modules, said Serial Bus communicating power and data between said printer module and said one or more further modules (column 8, lines 66-67 to column 9, lines 1-4).

Regarding claim 15, Miura discloses the controller of claim 14 wherein said data includes image data stored in said image storage memory 27 (column 8, lines 36-40).

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***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 2, 10, 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Helterline (US patent 6,039,430) in view of Miura et al. (US patent 6,659,584).

Regarding claim 1, Helterline discloses a method of controlling a printer module to print an image, and printer module comprising a first authentication means (memory 38), an ink cartridge incorporating a second authentication means (memory 38), a printhead 16 that prints an image on printable media with ink from the ink cartridge 18, said method including the steps of:

authenticating the ink cartridge by comparing said first authentication means and said second authentication means (column 2, lines 66-67 and column 3, lines 1-17);

However, Helterline does not disclose image storage memory that stores the image and an image access unit that accesses the image in the image storage memory

storing an image in image storage memory;

sensing the presence of printable media in the printer module;

activating a motor to advance said printable media past said printhead in said printer module;

retrieving said image from said image storage memory (column 6, lines 1-15);

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transforming said image to a form suitable for said printhead (column 6, lines 1-15); and  
transferring said transformed image to said printhead in a synchronous manner for  
printing by said printhead on said printable media (column 6, lines 1-15).

Miura discloses image storage memory (RAM 27) that stores the image and an image  
access unit (Discharge Controller 122) that accesses the image in the image storage memory  
sensing the presence of printable media in the printer module (column 6, lines 10-22);  
activating a motor to advance said printable media past said printhead in said printer  
module (column 6, lines 10-22);

storing an image in image storage memory (RAM 26);  
retrieving said image from said image storage memory (column 8, lines 36-40);  
transforming said image to a form suitable for said printhead (column 8, lines 40-52); and  
transferring said transformed image to said printhead in a synchronous manner for  
printing by said printhead on said printable media (column 9, lines 24-33).

Helterline and Mura are analogous art because they are from the same field of endeavor  
that is printing art. Therefore, it would have been obvious to a person skilled in the art, at the  
time of invention to use the memory management and printing processes of Miura with  
Helterline to prevent installation of non-compatible replaceable component and printing images  
on the paper.

Regarding claim 2, Miura discloses the method of claim 1 wherein said step of storing an  
image in image storage memory includes transferring an image from an image capture means to  
said image storage memory via said image access unit (Discharge Controller 122).

Regarding claim 10, arguments analogous to those presented for claim 1, are applicable.

Regarding claim 29, Helterline discloses a controller for a printer module having an ink cartridge 18 and a printhead 16 that prints an image on printable media with ink from the ink cartridge, said controller comprising:

two or more interface units communicating with components of said printer module, at least a first said interface unit 40 connecting to an authentication means in the ink cartridge and at least a second interface unit 42 connecting to an authentication means in the printer module (column 4, lines 54-63);

However, Helterline does not disclose the following limitations but Miura discloses a central processing unit (CPU 25);

a program memory (ROM 26) associated with said central processing unit, said program memory storing program steps for execution by said central processing unit to operate said printer module to print said image;

image storage memory storing said image (RAM 27); and

an image access unit (Discharge Controller 122) in communication with said image storage memory, said central processing unit and printhead interface, said image access unit accessing said image in said image storage memory and transferring said image to said printhead interface on command from central processing unit (column 8, lines 36-40);

wherein said printhead interface transforms said image for printing by the printhead (column 5, lines 17-20). Helterline and Miura are analogous art because they are from the same

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field of endeavor that is printing art. Therefore, it would have been obvious to a person skilled in the art, at the time of invention to use the memory management and printing processes of Miura with Helterline to prevent installation of non-compatible replaceable component and printing images on the paper.

Regarding claim 30, Helterline discloses the controller of claim 29 wherein said authentication means in the ink cartridge is a first QA chip (memory 38 in item 18) and said authentication means in the printer module is a second QA chip (memory 38 in item 16 of Fig. 3).

7. Claims 16, 18-21, 23 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miura et al. (US patent 6,659,584).

Regarding claims 16, 18-21, 23 and 28 Miura does not specifically disclose the limitations for memory size and processor speed as claimed. However, since these limitations as stated on pages 5, 13, 14 and 15 of the specification do not appear to be critical to the operation of the controller nor they produce unexpected results, they are considered to be design choices one could make among plurality of choices. Therefore, it would have been obvious to a person skilled in the art, at the time of invention to use the memory size and processor speeds as claimed since these components are commercially available.



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Regarding claim 28, Miura discloses the controller of claim 12 wherein said controller is an application specific integrated circuit. It is common to incorporate several operational functions in integrated circuits. Therefore, it would have been obvious to a person skilled in the art, at the time of invention to use application specific integrated circuits to reduce number of components used.

8. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miura et al. (US patent 6,659,584) in view of Silverbrook (US patent 5,914,737).

Regarding claim 22, Miura does not disclose the controller of claim 12 wherein said printhead interface includes a print generator unit that transforms said image stored in said image storage memory to a dithered CMY image for printing by said printhead. Silverbrook discloses this limitation in column 5, lines 64-67 and column 6, lines 1-4. At the time of invention, it would have been obvious to a person ordinary skill in the art to use dithered CMY image for printing. Miura and Silverbrook are analogous art because they are from the same field of endeavor that is printing art. Therefore, it would have been obvious to a person skilled in the art, at the time of invention to use dithered CMY image to obtain high quality print.

9. Claims 3, 4, 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Helterline (US patent 6,039,430) in view of Miura et al. (US patent 6,659,584) and further in view of Silverbrook (US patent 5,914,737).

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Regarding claim 3, Helterline and Miura do not disclose the method of claim 1 wherein the step of transforming said image includes transforming said image to a dithered CMY image for printing by said printhead. Silverbrook discloses column 29, lines 34-37 this limitation. At the time of invention it would have been obvious to a person skilled in the art, to use dithered CMY image for printing. Helterline, Miura and Silverbrook are analogous art because they are from the same field of endeavor that is printing art. Therefore, it would have been obvious to a person skilled in the art, at the time of invention to combine Helterline with Miura and Silverbrook to produce high quality color prints (see Silverbrook abstract).

Regarding claim 4, Helterline and Miura do not specifically disclose the limitations for memory size and processor speed as claimed. However, since these limitations as stated on pages 5, 13, 14 and 15 of the specification do not appear to be critical to the operation of the controller nor they produce unexpected results, they are considered to be design choices one could make among plurality of choices.

Regarding claim 8, Silverbrook discloses the method of claim 1 wherein the step of dithering the image converts contone CMY to dithered bi-level CMY (column 5, lines 64-67).

Regarding claim 9, Silverbrook discloses the method of claim 1 wherein said step of printing includes a further step of preheating and/or cleaning nozzles in said printhead (column 20, lines 48-67).

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10. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Helterline (US patent 6,039,430) in view of Miura et al. (US patent 6,659,584) and further in view of Gondek (US patent 6,137,495).

Regarding claim 5, Helterline and Miura do not disclose the method of claim 1 wherein said image is stored in image storage memory in L\*a\*b\* format and said step of transforming said image further includes the step of converting said image from L\*a\*b\* format to CMY format.

However, Gondek discloses in column 3, lines 1-7 converting L\*a\*b color space to color space of the printer. As it is well known, printers use the CYM color space for printing. Helterline, Miura and Gondek are analogous art because they are from the same field of endeavor that is printing art. Therefore, it would have been obvious to a person skilled in the art, at the time of invention to use Gondek for transformation of color spaces to enable output onto a printer.

Regarding claim 6, Gondek discloses the method of claim 5 wherein said step of converting said image from L\*a\*b\* format to CMY format is a tri-linear interpolation process (column 3, lines 18-20).

11. Claims 7 and 11 rejected under 35 U.S.C. 103(a) as being unpatentable over Helterline (US patent 6,039,430) in view of Miura et al. (US patent 6,659,584) and further in view of Tsai (US patent 5,742,409).

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Regarding claim 7, Silverbrook discloses the method of claim 1 wherein the step of transforming said image further includes the steps of:

dithering pixels in said image (column 29, lines 33-37); and

formatting said image so that said image is represented by a dot function, each dot corresponding to an ink nozzle of said printhead (column 6, lines 11-16).

However, Helterline and Miura do not disclose up-interpolating said image to a suitable resolution for printing. Tsai discloses in abstract that the function of the interpolation device is for inserting pixels into the original pixels to increase the resolution (same as up-interpolating). Silverbrook and Tsai are analogous art because they are from the same field of endeavor that is image processing art. Therefore, it would have been obvious to a person skilled in the art, at the time of invention to use the interpolation of Tsai to increase the efficiency of the video buffer and improve speed of I/O device.

Regarding claim 11, arguments analogous to those presented for claim 7, are applicable.

**12.** Claims 17, 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miura (US patent 6,659,584) in view of Silverbrook (US patent 5,914,737).

Regarding claim 17, Silverbrook discloses the controller of claim 12 wherein at least one of said one or more interface units is a parallel interface unit communicating with at least a motor, said motor activating under control of said central processing unit to advance said printable media past said printhead (paper transport control 66 in Fig. 1. (a)).

Regarding claim 24, Silverbrook discloses the controller of claim 12 wherein said printhead interface includes a synchronization generator unit (data phasing fault tolerant 506) that generates synchronization signals for transferring said image from said printhead interface to said printhead (column 32, lines 30-40).

Regarding claim 25, Silverbrook discloses the controller of claim 24 wherein said synchronization generator unit generates signals for synchronization of a motor of said printer module (column 32, lines 30-40).

**13.** Claims 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miura (US patent 6,659,584) in view of Helterline (US patent 6,039,430).

Regarding claim 26, Miura does not disclose the controller of claim 12 wherein at least one of said one or more interface units communicates with a QA chip 14 of an ink cartridge. Helterline discloses in Fig. 3, controller 26 communicating with memory 38 in the printhead and ink supply for authentication purposes to prevent installation of non-compatible replaceable printing components (column 3, lines 5-17). At the time of invention, it would have been obvious to a person ordinary skill in the art to use authentication methods to usage of appropriate ink supply. Miura and Helterline are analogous art because they are from the same field of endeavor that is printing art. Therefore, it would have been obvious to a person skilled in the art, at the time of invention to combine the memory 38 of Helterline with Miura to prevent installation of non-compatible replaceable printing component.

Regarding claim 27, Helterline discloses the controller of claim 26 wherein two of said one or more interface units communicate with a pair of QA chips, one said QA chip being said QA chip of said ink cartridge (memory 38 in Fig. 3) and the other said QA chip being an associated QA chip (memory 38), said QA chips cooperating to authenticate said ink cartridge for said printer module (column 3, lines 5-16).

### *Conclusion*

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


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***Contact Information***

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to (Iraj) Alan Rahimi whose telephone number is 703-306-3473. The examiner can normally be reached on Mon.-Fri. 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward L Coles can be reached on 703-305-4712. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3800.

  
Alan Rahimi  
June 9, 2004

  
EDWARD COLES  
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